

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Currently Amended) A microscope arrangement for imaging a sample that contains magnetically sensitive fluorescent markers, comprising:

a fluorescence microscope for exciting the markers with primary radiation for emitting fluorescence radiation and imaging the fluorescence radiation emitted by the markers from the sample;

a field generator for generating an inhomogeneous magnetic field in the sample to locally vary emission of the fluorescence radiation in a focal region of the sample;

wherein the field generator for generating the inhomogeneous magnetic field has a first pole body of a first polarity and second pole bodies of a second polarity, the first pole body being located between the second pole bodies and having a tip for forming the focal region in the sample, the tip of the first pole extending beyond the second pole bodies, wherein the focal region in the sample is across from the tip and the focal region has a size below an optical resolution of the fluorescence microscope, and wherein a strength of the inhomogeneous magnetic field has a local minimum at the focal region; and

a processor configured to reconstruct distribution of the fluorescent markers in the

sample from changes in the fluorescence radiation in response to moving the focal region.

2.(Currently Amended) The microscope arrangement as claimed in claim 1, which is designed to alter the inhomogeneous magnetic field within the sample in a defined manner.

Claim 3 (Canceled)

4.(Currently Amended) The microscope arrangement as claimed in claim 1, wherein the processor is further configured to process an image ~~ecorded~~recorded by the fluorescence microscope, the processor being further configured to reconstruct the distribution of the fluorescent markers in the sample from known spatial strength distribution of the inhomogeneous magnetic field during at least two images recorded by the fluorescence microscope.

5.(Currently Amended) A method of determining the spatial distribution of a magnetically sensitive fluorescent markers in a sample, the method comprising the act of:
generating an inhomogeneous magnetic field in the sample using a field generator that has a first pole body of a first polarity and second pole bodies of a second polarity, the first pole body being located between the second pole bodies and having a tip for forming a focal region in the sample, the tip of the first pole extending beyond the second pole

bodies, wherein the focal region in the sample is across from the tip, and wherein a strength of the inhomogeneous magnetic field has a local minimum at the focal region;
exciting the markers to produce fluorescence radiation in the sample;
generating by a fluorescence microscope an image of the fluorescence radiation coming from the sample, wherein the focal region has a size below an optical resolution of the fluorescence microscope;
calculating spatial distribution of the fluorescent ~~marker~~markers using the generated image and known strength distribution of the field.

6.(Previously Presented) The method as claimed in claim 5, wherein the inhomogeneous magnetic field has a gradient of at least 10^2 T/m.

Claim 7 (Canceled)

8.(Previously Presented) The method as claimed in claim 5, wherein the local minimum is a field-free point or region.

9.(Previously Presented) The method as claimed in claim 5, wherein a width of the local minimum is smaller than the optical resolution of the fluorescence microscope.

10.(Previously Presented) The method as claimed in claim 5, wherein the sample is

located in a solution with the fluorescent markers.

Claim 11 (Canceled)

12.(Previously Presented) The microscope arrangement of claim 1, wherein a width of the local minimum is smaller than the optical resolution of the fluorescence microscope.

13.(Previously Presented) The microscope arrangement of claim 1, wherein a width of the focal region is about 1 nm.

14.(Previously Presented) The method of claim 5, further comprising the act of moving a position of the focal region.

15.(Previously Presented) The method of claim 5, further comprising the act of scanning a concentration of the fluorescent markers with a resolution in a nanometer range by moving the focal region.

16.(Previously Presented) The method of claim 5, wherein the inhomogeneous magnetic field has a gradient of at least 10^6 T/m.

Claim 17 (Canceled)